

REMARKS

Claims 1-44, 46-67, and 69-88 are pending in the application. These claims have been rejected. Claims 48, 62, 69, and 87 were objected to because of informalities. Claims 57-73 and 84-88 were rejected under 35 U.S.C. § 101 as directed to non-statutory subject matter. Claims 1-33 and 74-78 were rejected under 35 U.S.C. § 112 ¶ 1 as failing to comply with the enablement requirement. Claims 57-73 and 84-88 were rejected under 35 U.S.C. § 112 ¶ 1 as failing to comply with the written description requirement. Claims 1-33 and 74-78 were rejected under 35 U.S.C. § 112 ¶ 2 as being incomplete for omitting essential elements. Claims 34-44, 46-67, and 79-88 were rejected under 35 U.S.C. § 112 ¶ 2 as being incomplete for omitting essential steps. Claims 2, 4, 6-7, 11-15, 35, 37, 39-40, 42, 44, 46-48, 74-77, and 80-82 were rejected under 35 U.S.C. § 102(b) as being unpatentable over European Patent No. 0751490A2 to Hayata ("Hayata"). Claims 20-22, 26-27, 32-33, 49-50, 55-56, and 72-73 were rejected under 35 U.S.C. § 102(e) as being unpatentable over U.S. Patent No. 6,202,046 to Oshikiri ("Oshikiri"). Claims 1, 22, 28, 34, 51, 57, 74, 83-84, and 88 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Oshikiri in view of Hayata. Claims 3, 5, 8-10, 23-25, 29-31, 36, 38, 41, 43, 52-54, 58-67, 69-71, and 85-87 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Hayata in view of Oshikiri.

Claims 48, 62, 69, 71, and 87 were objected to because of informalities. 48 and 71 depended on cancelled claims and have been amended in accordance with the suggestions in the Office Action to depend from claims 37 and 60, respectively, as they depended on cancelled claims before amendment. In accordance with the suggestion in the Office Action, claim 62 has been amended to read, *inter alia*, "processor to perform," instead of "processor, perform." Claims 69 and 87 depend from claims 62 and the minor informalities noted by the Office Action in these claims are remedied by the

amendment of claim 62. Claims 2, 4, 6, 35, 37, and 39 have been amended to clarify the subject matter claimed.

Claims 57-73 and 84-88 were rejected under 35 U.S.C. § 101 as directed to non-statutory subject matter. Claims 57, 58, 60, 62, 72, and 73 are independent claims.

Page 7 of the Office Action states that a limitation of these claims, a "computer executable program" has no structure. On Page 2, the Office Action stated that an earlier amendment did not remedy the purported § 101 issue because a "processor," is not specifically a "computer processor," the latter being fully supported by the specification. Applicant respectfully disagrees with this assertion. To facilitate prosecution, Applicant has amended the preambles of claims 57, 58, 60, 62, 72, and 73 to recite a "computer processor," as suggested in the Office Action.

It must be noted, though, the term computer processor, as disclosed in the specification, reads on "a radio terminal or a radio base station," a "voice terminal" using a "storage medium such as a floppy disk," and a "personal computer." Page 27-28. Claims 57, 58, 60, 62, 72, and 73 are patentable over the § 101 rejections in the Office Action.

Claims 1-33 and 74-78 were rejected under 35 U.S.C. § 112 ¶ 1 as failing to comply with the enablement requirement. Claims 1-2, 4, 6, and 20-21 are independent claims.

Page 8 of the Office Action contends that claim 1 is a single means claim and is subject to and undue breadth of rejection under 35 U.S.C. § 112 ¶ 1. To support this contention, on page 3, the Office Action alleges that claim 1, "recite[s] a single means (*i.e.*, element) not in combination with another element." Applicant respectfully disagrees with this contention and the argument upon which it is based.

Claim 1 is not a single means claim under 35 U.S.C. § 112 ¶ 6. First, claim 1 is directed to a circuit, which is not a means under 35 U.S.C. § 112 ¶ 6 because “the term ‘circuit’ itself denotes some structure.” See *Apex Inc. v. Raritan Computer, Inc.*, 325 F.3d 1364, 1373 (Fed. Cir. 2003) (holding that “a first interface circuit for receiving” is not a means-plus-function claim). Furthermore, in claim 1, the circuit is described as “a voice decoding circuit,” thus, “the term [‘circuit’] in the asserted claims includes additional adjectival qualifications further identifying sufficient structure to perform the claimed functions to one of ordinary skill in the art.” *Linear Tech. Corp. v. Impala Linear Corp.*, 379 F.3d 1311, 1320 (Fed. Cir. 2004) (holding that “a first circuit for monitoring a signal” and “a circuit for controlling” are not means-plus-function claims) (quoting *Apex Inc. v. Raritan Computer, Inc.*, 325 F.3d 1364, 1374 (Fed. Cir. 2003)). Finally, “[w]hen the structure-connoting term ‘circuit’ is coupled with a description of the circuit’s operation, sufficient structural meaning generally will be conveyed to persons of ordinary skill in the art, and 35 U.S.C. § 112 ¶ 6 presumptively will not apply.” *Linear Tech. Corp. v. Impala Linear Corp.*, 379 F.3d 1311, 1320 (Fed. Cir. 2004). In claim 1, the term ‘circuit’, is coupled with a description of the circuit’s operation, *i.e.*, “decoding the speech signals in said voiceless period and...synthesizing said speech said speech signals...,” thus conveying sufficient structural meaning to one of ordinary skill in the art.

The Office Action misquotes MPEP § 2164.08(a) with regard to single means claims. The correct reading of the statute further supports that claim 1 is not a single means claim. On page 3, the Office Action alleges that claim 1, “recite[s] a single means (*i.e.*, element) not in combination with another element.” A single means claim is “where a means recitation does not appear in combination with another **element of means**.” MPEP § 2164.08(a) (citing *In re Hyatt*, 708 F.2d 712, 714-15 (Fed. Cir. 1983)) (emphasis added). Single means claims rely on the recitation of a single means only. There can be no element in these claims because *In re Hyatt* does not apply to claims that recite elements. See MPEP § 2181. As previously discussed, claim 1 recites an element, a circuit, and is thus not a single means claim.

For at least the foregoing reasons, claim 1 is not a single means claims under 35 U.S.C. § 112 ¶ 6 and is therefore patentable over the Office Action's 35 U.S.C. § 112 ¶ 1 rejections. Claims 16, 22, 28, and 74 depend upon claim 1 and are patentable over the Office Action's 35 U.S.C. § 112 ¶ 1 rejection, at least based upon their dependence on claim 1.

Claims 2, 4, 6, and 20-21 are also not single means claims under 35 U.S.C. § 112 ¶ 6. The Office Action bases this assertion on the claim limitation in these claims, "a voice-less part decoding unit which changes." Applicant respectfully disagrees that this limitation can be used to identify these claims as single means claims.

MPEP § 2181 specifically enumerates three criteria for a single means claim. The claims cited by the Office Action do not meet these criteria because they all fail to meet at least two of the three criteria. Thus, claims 2, 4, 6, and 20-21 are not single means claims.

For a claim to fall within § 112 ¶ 6, the MPEP requires that "the claim limitations must use the phrase 'means for' or 'step for.'" § 2181. Claims 2, 4, 6, and 20-21 do not contain the required phrases. Although in certain situations the Board or the courts have determined that claims fell within the scope of 35 U.S.C. § 112 ¶ 6 without this language, the MPEP states, "[T]he examples are fact-specific and should not be applied as *per se* rules." *Id.* The Office Action cites no facts specific to this application and attempts to apply a past decision as a *per se* rule, in violation of patent procedure. There is no support in the claim language itself or in the surrounding facts for the Office Action's contention that claims 2, 4, 6, and 20-21 are single means claims.

For a claim to fall within § 112 ¶ 6, the MPEP also requires that "the phrase 'means for' or 'step for' must not be modified by sufficient structure, or acts for achieving the specified function." § 2181. In claims 2, 4, 6, and 20-21, the limitation cited by the

Office Action, "a voice-less part decoding unit which changes," is modified by acts for achieving the specified function. In claim 2, the "voice-less part decoding unit" is followed by the acts describing the use of a "coefficient," and "feature parameters," which allow the part to "[decode] the speech signal...by smoothing at least one of the feature parameters of the changed coefficient." In claims 4 and 6, the acts of changing a value of a coefficient and decoding the speech immediately follow the "voice-less part decoding unit." In claim 20 and 21, the "voice-less part decoding unit" is followed by the act of generating a signal and a description of the specific acts used to generate this signal. Thus, claims 2, 4, 6, and 20-21 are not single means claims under MPEP § 2181.

For at least the foregoing reasons, claims 2, 4, 6, and 20-21 are not single means claims under 35 U.S.C. § 112 ¶ 6 and are therefore patentable over the Office Action's 35 U.S.C. § 112 ¶ 1 rejections. Claims 3, 5, 7-19, 22-33 and 74-78 depend upon claims 2, 4, 6, and 20-21 and are patentable over the Office Action's 35 U.S.C. § 112 ¶ 1 rejection, at least based on their dependence on claims 2, 4, 6, and 20-21.

Claims 57-73 and 84-88 were rejected under 35 U.S.C. § 112 ¶ 1 as failing to comply with the written description requirement. Page 9 of the Office Action argues that the term "processor," in these claims is not supported in the specification. As previously discussed, independent claims 57, 58, 60, 62, 72, and 73 have been amended to recite a "computer processor." Thus, dependent claims 59, 61, 63-71 and 84-88, which rely on these independent claims, are patentable over Office Action's 35 U.S.C. § 112 ¶ 1 rejections.

Claims 1-33 and 74-78 were rejected under 35 U.S.C. § 112 ¶ 2 as being incomplete for omitting essential elements. Page 10 of the Office Action asserts that "a means for determining/detecting the presence of a voice-less period" is missing from

the claim. Applicant respectfully disagrees; a means for determining/detecting the presence of a voice-less period is not an essential element.

As supported in the specification, there are a variety of external and internal methods by which the decoding device may be provided with indicators of whether there is a voice or voice-less period. For example, according to one embodiment of many embodiments described in the specification on pages 13-14, the actual parameters received by the device may indicate whether the periods they represent contain voice or are voice-less. In this embodiment, because the parameters themselves, as received by the speech decoding device, are indicative of whether the periods contain voice or are voice-less, "a means for determining/detecting the presence of a voice-less period" is not an essential element of these claims. The device must only receive the parameters in order to obtain the voice information. Based on this example as well as other possible embodiments supported by the specification, "a means for determining/detecting the presence of a voice-less period" is not an essential claim element. Thus, claims 1-2, 4, 6, 20 and 21 and their dependent claims 3, 5, 7-19, 22-33 and 74-78 are patentable over the Office Action's 35 U.S.C. § 112 ¶ 2 rejections.

Claims 34-44, 46-67, and 79-88 were rejected under 35 U.S.C. § 112 ¶ 2 as being incomplete for omitting essential steps. Page 10 of the Office Action asserts that "a step for determining/detecting the presence of a voice-less period" is missing from the claim. Applicant respectfully disagrees.

Independent claims 34, 35, 37, 39, 49, 50, 57, 58, 60, and 62 recite "decoding signals by changing a decoding operation corresponding to received feature parameters." As explained in the specification on pages 13-14, these parameters indicate whether the periods they represent contain voice or are voice-less. Because the parameters themselves that are received by the speech decoding device are indicative of whether the periods contain voice or are voice-less, "a step for

determining/detecting the presence of a voice-less period" is not an essential elements of these claims. The mere receipt of the parameters is determinative as to whether the periods contain voice or are voice-less. Thus, claims 34, 35, 37, 39, 49, 50, 57, 58, 60, and 62 and their dependent claims 36, 38, 40-44, 46-48, 51-56, 59, 61, 63-67, and 79-88 are patentable over the Office Action's 35 U.S.C. § 112 ¶ 2 rejections.

Claims 2, 4, 6-7, 11-15, 35, 37, 39-40, 42, 44, 46-48, 74-77, and 80-82 were rejected under 35 U.S.C. § 102(b) as being unpatentable over Hayata. Claims 2, 4, 6, 35, 37 and 39 are independent claims.

As amended, claims 2, 4, 6, 35, 37, and 39 recite, *inter alia*, smoothing at least one of the feature parameter "by mixing the feature parameter received in the past." Hayata does not disclose this limitation.

Hayata discloses a speech decoding apparatus including a smoothed filter coefficient generation unit 108 to generate a smoothed filter coefficient on the basis of a synthesis filter coefficient output from a synthesis filter coefficient generation unit 106. See Col. 5, Ins. 21-26. Thus, in Hayata, the smoothed filter coefficient is independent of that of a prior frame(s). Rather, the smoothed filter coefficient is produced by the use of the synthesis filter coefficient, an inverse characteristics of the synthesis filter coefficient and a value *fr* of a frame counter 108a. See Col. 8, Ins. 21-55. Because the synthesis filter coefficient is constant until it is updated, the inverse characteristics are varied by only the value *fr* during the time period. Specifically, the inverse characteristics is varied by an equation (2) according to the value *fr* as shown in Fig. 2. Accordingly, though the smoothed filter coefficient depends on the value *fr*, it does not depend on that of the prior frame. The smoothed filter coefficient is merely smoothed in each frame.

In contrast, the claimed invention uses smoothed feature parameters, which are obtained by smoothing, in a time direction, at least one of feature parameters

representing spectral envelope characteristics. The smoothed feature parameters are dependent on past feature parameters (or a weighted average of spectra of past frames). Therefore, a coefficient used to smooth at least one of the smoothed feature parameters is quite different from the smoothed filter coefficient of Hayata. Accordingly, Hayata does not disclose smoothing at least one of the feature parameter "by mixing the feature parameter received in the past," as required by claims 2, 4, 6, 35, 37, and 39 recite.

For at least the foregoing reason, claims 2, 4, 6, 35, 37, and 39 are patentable over Hayata. Dependent claims 5-7, 11-15, 40, 42, 44, 46-48, 74-77, and 80-82, which depend from these patentable independent claims are likewise patentable over Hayata at least by virtue of their dependence.

Claims 20-22, 26-27, 32-33, 49-50, 55-56, and 72-73 were rejected under 35 U.S.C. § 102(e) as being unpatentable over Oshikiri. Claims 20, 21, 49, 50, 72, and 73 are independent claims.

Claim 20 and 21 recite, *inter alia*, determining a "weighting coefficient used in a weighted sum operation...according to at least one feature parameter." Pages 13-14 of the Office Action allege that Oshikiri discloses determining a weighting coefficient according to a feature parameter. Applicant respectfully disagrees.

Oshikiri does not disclose utilizing a weighting coefficient in a weighted sum operation. Rather, Oshikiri teaches using only a multiplier 409 to combine an excitation signal and a gain value. See col. 20, lns. 26-27; Figure 17. In Oshikiri, the excitation signal and the gain derived from the values of the parameters received by the apparatus are multiplied together. This is the only mathematical operation performed in Oshikiri. No where in this operation does Oshikiri utilize a weighting coefficient in a weighted sum operation, as required by claims 20 and 21.

Additionally Oshikiri does not disclose determining a “weighting coefficient...according to at least one feature parameter.” As aforementioned, Oshikiri does not utilize a weighting coefficient. Furthermore, the only parameters received by Oshikiri’s background noise decoder 404, are converted before being multiplied using the multiplier 409: the excitation signal decoder generates 406 the excitation signal from an excitation parameter and the gain decoder 407 generates the gain from a gain parameter. See col. 20, Ins. 15-25; Figure 17. Thus, Oshikiri does not disclose determining a “weighting coefficient...according to at least one feature parameter,” as required by claims 20 and 21.

Claims 20 and 21 further recite, *inter alia*, “the excitation signal generated by using the weighting coefficient.” Similarly, claims 49, 50, 72, and 73 recite, *inter alia*, “determining a weighting coefficient used to generate an excitation signal.” Pages 13-14 of the Office Action allege that Oshikiri discloses this method for generating the excitation signal. Applicant respectfully disagrees.

Rather than generate an excitation signal using a weighting coefficient, as required by claims 20, 21, 49, 50, 72, and 73, Oshikiri’s excitation signal decoder 406 generates the excitation signal by decoding a parameter sent by the demultiplexer 402. See col. 9, In. 63 – col. 20, In. 19. Thus, there is no weighting coefficient involved in the generation of this signal, as required by claims 20, 21, 49, 50, 72, and 73.

For at least the foregoing reasons, claims 20, 21, 49, 50, 72, and 73 are patentable over Oshikiri. By virtue of their dependence on either claim 20, 21, 49, 50, 55, 56, 72, and 73, claims 26, 27, 32,33, 55, 56, 83, and 88 are also patentable over Oshikiri.

Claims 1, 22, 28, 34, 51, 57, 74, 83-84, and 88 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Oshikiri in view of Hayata. Claims 1, 34, and 57 are independent claims.

Claims 1, 34, and 57 recite, *inter alia*, “smoothing said feature parameters for spectral envelope characteristics.” Page 15 on the Office Action admits that Oshikiri does not disclose this limitation, but the Office Action states that Hayata teaches this limitation. Applicant respectfully disagrees.

As discussed earlier, the claimed invention uses smoothed feature parameters, which are obtained by smoothing, at least one of feature parameters representing spectral envelope characteristics. Rather than smoothing feature parameters for spectral envelope characteristics, Hayata produces a smoothed filter coefficient by the use of the synthesis filter coefficient, using inverse characteristics of the synthesis filter coefficient and a value *fr* of a frame counter 108a. Additionally, Hayata performs filter processing so that the difference in spectrum in the frequency envelope is minimized. See Col. 5, Ins. 21-34. Thus, Hayata is not smoothing the feature parameters for spectral envelope characteristics, as required by claims 1, 34, and 57.

For at least these reasons, claims 1, 34, and 57 are patentable over Oshikiri in view of Hayata. At least by virtue of their dependence on these claims, dependent claims 22, 28, 51, 74, 83-84, and 88 are also patentable over Oshikiri in view of Hayata.

In view of the above amendments, applicant believes the pending application is in condition for allowance.

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